

**ABSTRACT**

The present invention relates to the use of multiple store buffer forwarding in a microprocessor system with a restrictive memory model. In accordance with an embodiment of the present invention, the system and method allow load operations that are completely covered  
5 by two or more store operations to receive data via store buffer forwarding in such a manner as to retain the side effects of the restrictive memory model thereby increasing processor performance without violating the restrictive memory model. In accordance with an embodiment the present invention, a method for multiple store buffer forwarding in a system with a restrictive memory model includes executing multiple store instructions, executing a load instruction, determining  
10 that a memory region addressed by the load instruction matches a cacheline address in a memory, determining that data stored by the multiple store instructions completely covers the memory region addressed by the load instruction, and transmitting a store forward is OK signal.